**IN THE UNITED STATES DISTRICT COURT**
**FOR THE EASTERN DISTRICT OF TEXAS**
**TYLER DIVISION**

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| REALTIME DATA LLC d/b/a IXO,<br>Plaintiff,<br>v.<br>ECHOSTAR CORPORATION,<br>HUGHES NETWORK SYSTEMS, LLC<br>Defendants. | Case No. 6:17-cv-00084<br>JURY TRIAL DEMANDED |

**SECOND AMENDED COMPLAINT FOR PATENT INFRINGEMENT**

This is an action for patent infringement arising under the Patent Laws of the United States of America, 35 U.S.C. § 1 *et seq.* in which Plaintiff Realtime Data LLC d/b/a IXO ("Plaintiff," "Realtime," or "IXO") makes the following allegations against Defendants EchoStar Corporation and Hughes Network Systems, LLC:

**PARTIES**

1. Realtime is a New York limited liability company. Realtime has places of business at 1828 E.S.E. Loop 323, Tyler, Texas 75701 and 66 Palmer Avenue, Suite 27, Bronxville, NY 10708. Since the 1990s, Realtime has researched and developed specific solutions for data compression, including, for example, those that increase the speeds at which data can be stored and accessed. As recognition of its innovations rooted in this technological field, Realtime holds over 47 United States patents and has numerous pending patent applications. Realtime has licensed patents in this portfolio to many of the world's leading technology companies. The patents-in-suit relate to Realtime's development of advanced systems and methods for fast and efficient data compression using numerous innovative compression techniques based on, for example, particular attributes of the data.

2. On information and belief, EchoStar Corporation is a Nevada corporation

with its principal place of business at 100 Inverness Terrace East, Englewood, CO 80112 and a regular and established place of business at 10303 E Bankhead Hwy # 100, Aledo, TX 76008. See, e.g., https://www.yellowpages.com/aledo-tx/mip/echostar-satellite-11408900. Upon information and belief, EchoStar Corporation has a regular and established place of business in this District. On information and belief, EchoStar Corporation can be served through its registered agent, Corporation Service Company, 1560 Broadway, Suite 2090, Denver, CO 80202. On information and belief, EchoStar Corporation directly or indirectly owns co-defendant Hughes Network Systems, LLC ("Hughes").[1]

3. On information and belief, Hughes Network Systems, LLC ("Hughes") is a Delaware limited liability company having a principal place of business at 11717 Exploration Lane, Germantown, MD 20876 and regular and established places of business at 16535 Southwest Fwy, Sugar Land, TX 77479, 11415 Fm 730 N, Azle, TX 76020, and 1500 Harvey Rd, College Station, TX 77840. See, e.g., https://www.yellowpages.com/sugar-land-tx/mip/hughes-network-sys-453634557, https://www.yellowpages.com/azle-tx/mip/hughes-network-system-468970694, https://www.mapquest.com/us/texas/business-college-station/hughes-network-systems-llc-275648921. Upon information and belief, Hughes has a regular and established place of business in this District. See, e.g., http://hughesnetplans.com/satellite-internet/Texas/P/Plano/ ("HughesNet Satellite Internet Plano: Making Military Technology Available to Civilians By providing such a trustworthy and protected connection, HughesNet has been named America's #1 choice for satellite Internet. Call to order HughesNet for your Plano home today to get an Internet connection that is tried and tested, whatever your needs are."). On information and belief, Hughes can be served through its registered agent, Corporation Service Company d/b/a CSC-Lawyers

[1] *See* http://www.wsj.com/articles/SB10001424052748703584804576143833056404482

Incorporating Service, 211 E. 7th Street Suite 620, Austin, TX 78701. On information and belief, Hughes has been a direct or indirect subsidiary of EchoStar since at least 2011.

4. On information and belief, EchoStar, as the direct or indirect owner of Hughes, promotes and offers for sales Hughes-branded products, including HN/HX broadband satellite routers. *See, e.g.*, http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en. As further explained below, HN/HX broadband satellite routers infringe certain asserted patents. Accordingly, each of the Defendants is properly joined in this action pursuant to 35 U.S.C. § 299.

## JURISDICTION AND VENUE

5. This action arises under the patent laws of the United States, Title 35 of the United States Code. This Court has original subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

6. This Court has personal jurisdiction over EchoStar Corporation in this action because EchoStar Corporation has committed acts within the Eastern District of Texas giving rise to this action and has established minimum contacts with this forum such that the exercise of jurisdiction over EchoStar Corporation would not offend traditional notions of fair play and substantial justice. EchoStar Corporation directly and through subsidiaries (including Hughes) or intermediaries (including distributors, retailers, and others), has committed and continues to commit acts of infringement in this District by, among other things, offering to sell and selling products and/or services that infringe the asserted patents. Furthermore, upon information and belief, EchoStar Corporation has a regular and established place of business at 10303 E Bankhead Hwy # 100, Aledo, TX 76008. See, e.g., https://www.yellowpages.com/aledo-tx/mip/echostar-satellite-11408900. Upon information and belief, EchoStar Corporation has a regular and established place of business in this District.

7. This Court has personal jurisdiction over Hughes in this action because

Defendants have committed acts within the Eastern District of Texas giving rise to this action and has established minimum contacts with this forum such that the exercise of jurisdiction over Hughes would not offend traditional notions of fair play and substantial justice. Hughes, directly and through subsidiaries or intermediaries (including distributors, retailers, and others), has committed and continues to commit acts of infringement in this District by, among other things, offering to sell and selling products and/or services that infringe the asserted patents. For example, Hughes advertises its services in this District, "HughesNet Satellite Internet Plano: Making Military Technology Available to Civilians By providing such a trustworthy and protected connection, HughesNet has been named America's #1 choice for satellite Internet. Call to order HughesNet for your Plano home today to get an Internet connection that is tried and tested, whatever your needs are." See, e.g., http://hughesnetplans.com/satellite-internet/Texas/P/Plano/. Hughes is registered to do business in the State of Texas and has appointed Corporation Service Company d/b/a CSC-Lawyers Incorporating Service, 211 E. 7th Street Suite 620, Austin, TX 78701 as its agent for service of process. Furthermore, Hughes has regular and established places of business at 16535 Southwest Fwy, Sugar Land, TX 77479, 11415 Fm 730 N, Azle, TX 76020, and 1500 Harvey Rd, College Station, TX 77840. See, e.g., https://www.yellowpages.com/sugar-land-tx/mip/hughes-network-sys-453634557, https://www.yellowpages.com/azle-tx/mip/hughes-network-system-468970694, https://www.mapquest.com/us/texas/business-college-station/hughes-network-systems-llc-275648921. Upon information and belief, Hughes has a regular and established place of business in this District. See, e.g., http://hughesnetplans.com/satellite-internet/Texas/P/Plano/ ("HughesNet Satellite Internet Plano: Making Military Technology Available to Civilians By providing such a trustworthy and protected connection, HughesNet has been named America's #1 choice for satellite Internet. Call to order HughesNet for your Plano home today to get an Internet connection that is tried and tested, whatever your needs are.").

8. Venue is proper in this district under 28 U.S.C. §§ 1391(b), 1391(c) and 1400(b). Upon information and belief, all Defendants have transacted business in the Eastern District of Texas and have committed acts of direct and indirect infringement in the Eastern District of Texas. In addition, Echostar maintains an Uplink & Broadcast Center in Texas located at 710 Conrads Ln., New Braunfels, TX 78130. *See* http://www.echostar.com/company/locations.aspx. In addition, on information and belief, EchoStar has a regular and established place of business at 10303 E Bankhead Hwy # 100, Aledo, TX 76008. See, e.g., https://www.yellowpages.com/aledo-tx/mip/echostar-satellite-11408900. In addition, Hughes is registered to do business in Texas and maintains a sales office in Texas located at 320 Decker, Suite 100, Irving TX 75062. *See id.* Upon information and belief, Hughes also has a regular and established place of business in this District. See, e.g., http://hughesnetplans.com/satellite-internet/Texas/P/Plano/ ("HughesNet Satellite Internet Plano: Making Military Technology Available to Civilians By providing such a trustworthy and protected connection, HughesNet has been named America's #1 choice for satellite Internet. Call to order HughesNet for your Plano home today to get an Internet connection that is tried and tested, whatever your needs are.").

## ASSERTED PATENTS

9. The asserted patents are U.S. Patent Nos. 8,717,204 ("'204 patent"); 9,054,728 ("'728 patent"); 7,358,867 ("'867 patent"); and 8,502,707 ("'707 patent"), (collectively, "Asserted Patents").

10. The Asserted Patents have been cited as prior art during the prosecution of at least 400 patent applications of Realtime and other companies. Those other companies include well-known technology companies such as: Quantum, Fujitsu, IBM, Seagate, STMicroelectronics, Cisco, LSI, Skyfire Labs, Chicago Mercantile Exchange, Thomson Reuters, OSR Open Systems Resources, Exegy, RIM, Renesas, Red Hat, Xerox, and Microsoft.

## COUNT I

## INFRINGEMENT OF U.S. PATENT NO. 8,717,204

11. Plaintiff realleges and incorporates by reference paragraphs 1-10 above, as if fully set forth herein.

12. Plaintiff Realtime is the owner by assignment of United States Patent No. 8,717,204 entitled "Methods for encoding and decoding data." The '204 patent was duly and legally issued by the United States Patent and Trademark Office on May 6, 2014. A true and correct copy of the '204 Patent is included as Exhibit A.

**Accused Instrumentality Including HN/HX Systems**

13. On information and belief, Defendants EchoStar Corporation, EchoStar Technologies L.L.C., and Hughes Network Systems LLC (collectively, "Defendants") have offered for sale, sold and/or imported into the United States products that infringe the '204 patent, and continues to do so. By way of illustrative example, these infringing products include, without limitation, Defendants' products and services, such as HN/HX Systems, and all versions and variations thereof since the issuance of the '204 patent ("Accused Instrumentality").

14. On information and belief, Defendants have directly infringed and continue to infringe the '204 patent, for example, through their own use and testing of the accused products to practice compression methods claimed by the '204 patent, including a method for processing data, the data residing in data fields, comprising: recognizing any characteristic, attribute, or parameter of the data; selecting an encoder associated with the recognized characteristic, attribute, or parameter of the data; compressing the data with the selected encoder utilizing at least one state machine to provide compressed data having a compression ratio of over 4:1; and point-to-point transmitting the compressed data to a client; wherein the compressing and the transmitting occur over a period of time which is less than a time to transmit the data in an uncompressed form. On information and belief, Defendants use the Accused Instrumentality in its ordinary and customary fashion for their

own internal non-testing business purposes, while testing the Accused Instrumentality, and while providing technical support and repair services for the Accused Instrumentality to Defendants' customers, and use of the Accused Instrumentality in its ordinary and customary fashion results in infringement of the methods claimed by the '204 patent.

15. On information and belief, Defendants have had knowledge of the '204 patent since at least the filing of the February 14, 2017 original Complaint in this action or shortly thereafter, and on information and belief, Defendants knew of the '204 patent and knew of their infringement, including by way of this lawsuit.

16. Defendants' affirmative acts of making, using, selling, offering for sale, and/or importing the Accused Instrumentality have induced since the filing of the original Complaint on February 14, 2017 and continue to induce users of the Accused Instrumentality to use the Accused Instrumentality in its normal and customary way to infringe the '204 patent by practicing compression methods claimed by the '204 patent, including a method for processing data, the data residing in data fields, comprising: recognizing any characteristic, attribute, or parameter of the data; selecting an encoder associated with the recognized characteristic, attribute, or parameter of the data; compressing the data with the selected encoder utilizing at least one state machine to provide compressed data having a compression ratio of over 4:1; and point-to-point transmitting the compressed data to a client; wherein the compressing and the transmitting occur over a period of time which is less than a time to transmit the data in an uncompressed form. For example, Defendants explain to customers the benefits of using the Accused Instrumentality, "A standard TCP/IP header is 40 bytes per packet, and most of that information is redundant for a given session. Header compression suppresses any redundant information, reducing the bandwidth required for the header. … PEP packet payload compression uses the V.44 lossless compression algorithm. … Stateful compression is able to take advantage of redundancy in all messages being sent instead of only redundancy within a message, thus providing significantly better compression ratios.

Compression ratios of up to 12:1 are achieved." See http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 9. Defendants specifically intended and were aware that the normal and customary use of the Accused Instrumentality would infringe the '204 patent. Defendants performed the acts that constitute induced infringement, and would induce actual infringement, with the knowledge of the '204 patent and with the knowledge, or willful blindness to the probability, that the induced acts would constitute infringement. On information and belief, Defendants engaged in such inducement to promote the sales of the Accused Instrumentality, *e.g.,* through Defendants' user manuals, product support, marketing materials, and training materials to actively induce the users of the Accused Instrumentality to infringe the '204 patent. Accordingly, Defendants have induced since the filing of the original Complaint on February 14, 2017 and continue to induce users of the Accused Instrumentality to use the Accused Instrumentality in its ordinary and customary way to infringe the '204 patent, knowing that such use constitutes infringement of the '204 patent.

17. The Accused Instrumentality practices a method for processing data, the data residing in data fields. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 8-9 ("HN/HX Systems provide IP/TCP/UDP/RTP header compression and payload compression in both inbound and outbound directions. A standard TCP/IP header is 40 bytes per packet, and most of that information is redundant for a given session. … PEP packet payload compression uses the V.44 lossless compression algorithm.").

18. The Accused Instrumentality recognizes any characteristic, attribute, or parameter of the data, for example, whether the data is packet header data or packet payload data. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 8-9 ("HN/HX Systems provide IP/TCP/UDP/RTP header compression and payload compression in both inbound and

outbound directions. A standard TCP/IP header is 40 bytes per packet, and most of that information is redundant for a given session. Header compression suppresses any redundant information, reducing the bandwidth required for the header. This compression capability requires that a large number of the fields either do not change or change only in expected ways. Inbound header compression compresses TCP/IP headers from 40 bytes to 10–12 bytes, reducing typical bandwidth usage by 15–-20%. The inbound compression algorithm is a Hughes-extended version of RFC 1144. Multiple types of IP headers can be compressed, including IP headers, UDP headers, TCP headers, RTP headers, and Hughes' PBP headers. Outbound header compression compresses IP, UDP, and RTP headers using the header fields that do not change or change in predictable ways. The outbound compression algorithm is based on RFC 3095, Robust Header Compression, and the Hughes inbound header compression algorithm. IP/UDP/RTP headers for RTP packets (types G.729 and G.723.1) are compressed. With outbound header compression, the size of the IP/UDP/RTP headers becomes 5 bytes from 40 bytes. With an average RTP payload size of 20 bytes, the expected compression ratio for IP/UDP/RTP packets is 35/(40+20) = 58.3 %. PEP packet payload compression uses the V.44 lossless compression algorithm. V.44 is an ITU standardized compression technology based on a Hughes-patented compression algorithm. The PEP stateful compression implementation takes advantage of the guaranteed, in-order delivery service provided by the PEP backbone protocol. Stateful compression is able to take advantage of redundancy in all messages being sent instead of only redundancy within a message, thus providing significantly better compression ratios. Compression ratios of up to 12:1 are achieved. HN/HX Systems feature IP Payload Compression for UDP Packets utilizing the IP Payload Compression Protocol (IPComp) per RFC 3173 to compress UDP traffic (for example, DNS, BRP, SNMP, Multicast traffic) using a lossless, stateless compression algorithm. The bandwidth savings is a function of traffic type. Bandwidth usage for typical DNS request traffic will be reduced by 10%, DNS responses by 30%, and SNMP traffic by 50%.").

19. The Accused Instrumentality selects an encoder associated with the recognized characteristic, attribute, or parameter of the data, for example, whether the data is packet header data or packet payload data. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 8-9 ("HN/HX Systems provide IP/TCP/UDP/RTP header compression and payload compression in both inbound and outbound directions. A standard TCP/IP header is 40 bytes per packet, and most of that information is redundant for a given session. Header compression suppresses any redundant information, reducing the bandwidth required for the header. This compression capability requires that a large number of the fields either do not change or change only in expected ways. Inbound header compression compresses TCP/IP headers from 40 bytes to 10–12 bytes, reducing typical bandwidth usage by 15–-20%. The inbound compression algorithm is a Hughes-extended version of RFC 1144. Multiple types of IP headers can be compressed, including IP headers, UDP headers, TCP headers, RTP headers, and Hughes' PBP headers. Outbound header compression compresses IP, UDP, and RTP headers using the header fields that do not change or change in predictable ways. The outbound compression algorithm is based on RFC 3095, Robust Header Compression, and the Hughes inbound header compression algorithm. IP/UDP/RTP headers for RTP packets (types G.729 and G.723.1) are compressed. With outbound header compression, the size of the IP/UDP/RTP headers becomes 5 bytes from 40 bytes. With an average RTP payload size of 20 bytes, the expected compression ratio for IP/UDP/RTP packets is 35/(40+20) = 58.3 %. PEP packet payload compression uses the V.44 lossless compression algorithm. V.44 is an ITU standardized compression technology based on a Hughes-patented compression algorithm. The PEP stateful compression implementation takes advantage of the guaranteed, in-order delivery service provided by the PEP backbone protocol. Stateful compression is able to take advantage of redundancy in all messages being sent instead of only redundancy within a message, thus providing significantly better compression ratios. Compression ratios of up

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20. The Accused Instrumentality compresses the data with the selected encoder utilizing at least one state machine to provide compressed data having a compression ratio of over 4:1. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 8-9 ("HN/HX Systems provide IP/TCP/UDP/RTP header compression and payload compression in both inbound and outbound directions. A standard TCP/IP header is 40 bytes per packet, and most of that information is redundant for a given session. Header compression suppresses any redundant information, reducing the bandwidth required for the header. This compression capability requires that a large number of the fields either do not change or change only in expected ways. Inbound header compression compresses TCP/IP headers from 40 bytes to 10–12 bytes, reducing typical bandwidth usage by 15–-20%. The inbound compression algorithm is a Hughes-extended version of RFC 1144. Multiple types of IP headers can be compressed, including IP headers, UDP headers, TCP headers, RTP headers, and Hughes' PBP headers. Outbound header compression compresses IP, UDP, and RTP headers using the header fields that do not change or change in predictable ways. The outbound compression algorithm is based on RFC 3095, Robust Header Compression, and the Hughes inbound header compression algorithm. IP/UDP/RTP headers for RTP packets (types G.729 and G.723.1) are compressed. With outbound header compression, the size of the IP/UDP/RTP headers becomes 5 bytes from 40 bytes. With an average RTP payload size of 20 bytes, the expected compression ratio for IP/UDP/RTP packets is 35/(40+20) = 58.3 %. PEP packet payload compression uses the V.44 lossless compression algorithm.

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21. The Accused Instrumentality point-to-point transmits the compressed data to a client. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 1 ("Fully IP compliant, all HN/HX broadband satellite routers interoperate directly with other routers on the remote LAN through standard IP protocols, eliminating the need for an external router.").

22. In the Accused Instrumentality, the compressing and the transmitting occur over a period of time which is less than a time to transmit the data in an uncompressed form. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 9 ("Inbound header compression compresses TCP/IP headers from 40 bytes to 10–12 bytes, reducing typical bandwidth usage by 15–-20%. … With outbound header compression, the size of the IP/UDP/RTP headers becomes 5 bytes from 40 bytes. With an average RTP payload size of 20 bytes, the expected compression ratio for IP/UDP/RTP packets is 35/(40+20) = 58.3 %. Stateful compression is able to take advantage of redundancy in all messages being sent instead of only redundancy within a message, thus providing significantly better compression ratios. Compression ratios of up to 12:1 are achieved. … The bandwidth savings is a function of

traffic type. Bandwidth usage for typical DNS request traffic will be reduced by 10%, DNS responses by 30%, and SNMP traffic by 50%.").

23. Defendants also infringe other claims of the '204 patent, directly and through inducing infringement, for similar reasons as explained above with respect to Claim 1 of the '204 patent.

24. By making, using, offering for sale, selling and/or importing into the United States the Accused Instrumentality, and touting the benefits of using the Accused Instrumentality's compression features, Defendants have injured Realtime and are liable to Realtime for infringement of the '204 patent pursuant to 35 U.S.C. § 271.

25. As a result of Defendants' infringement of the '204 patent, Plaintiff Realtime is entitled to monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court.

## COUNT II

## INFRINGEMENT OF U.S. PATENT NO. 9,054,728

26. Plaintiff realleges and incorporates by reference paragraphs 1-25 above, as if fully set forth herein.

27. Plaintiff Realtime is the owner by assignment of United States Patent No. 9,054,728 ("the '728 patent") entitled "Data compression systems and methods." The '728 patent was duly and legally issued by the United States Patent and Trademark Office on June 9, 2015. A true and correct copy of the '728 Patent is included as Exhibit B.

**Accused Instrumentality Including HN/HX Systems**

28. On information and belief, Defendants have offered for sale, sold and/or imported into the United States Hughes products that infringe the '728 patent, and continues to do so. By way of illustrative example, these infringing products include, without limitation, Defendants' products and services, such as HN/HX Systems, and all

versions and variations thereof since the issuance of the '728 patent ("Accused Instrumentality").

29. On information and belief, Defendants have directly infringed and continue to infringe the '728 patent, for example, through their own use and testing of the Accused Instrumentality, which constitute systems for compressing data claimed by Claim 1 of the '728 patent, comprising a processor; one or more content dependent data compression encoders; and a single data compression encoder; wherein the processor is configured: to analyze data within a data block to identify one or more parameters or attributes of the data wherein the analyzing of the data within the data block to identify the one or more parameters or attributes of the data excludes analyzing based solely on a descriptor that is indicative of the one or more parameters or attributes of the data within the data block; to perform content dependent data compression with the one or more content dependent data compression encoders if the one or more parameters or attributes of the data are identified; and to perform data compression with the single data compression encoder, if the one or more parameters or attributes of the data are not identified. Upon information and belief, Defendants use the Accused Instrumentality, an infringing system, for their own internal non-testing business purposes, while testing the Accused Instrumentality, and while providing technical support and repair services for the Accused Instrumentality to Defendants' customers.

30. On information and belief, Defendants have had knowledge of the '728 patent since at least the filing of this Complaint or shortly thereafter, and on information and belief, Defendants knew of the '728 patent and knew of their infringement, including by way of this lawsuit.

31. Defendants' affirmative acts of making, using, selling, offering for sale, and/or importing the Accused Instrumentality has induced and continue to induce users of the Accused Instrumentality to use the Accused Instrumentality in its normal and customary way on compatible systems to infringe the '728 patent, knowing that when the

Accused Instrumentality is used in its ordinary and customary manner with such compatible systems, such systems constitute infringing systems for compressing data comprising; a processor; one or more content dependent data compression encoders; and a single data compression encoder; wherein the processor is configured: to analyze data within a data block to identify one or more parameters or attributes of the data wherein the analyzing of the data within the data block to identify the one or more parameters or attributes of the data excludes analyzing based solely on a descriptor that is indicative of the one or more parameters or attributes of the data within the data block; to perform content dependent data compression with the one or more content dependent data compression encoders if the one or more parameters or attributes of the data are identified; and to perform data compression with the single data compression encoder, if the one or more parameters or attributes of the data are not identified. For example, Defendants explain to customers the benefits of using the Accused Instrumentality, "A standard TCP/IP header is 40 bytes per packet, and most of that information is redundant for a given session. Header compression suppresses any redundant information, reducing the bandwidth required for the header. … PEP packet payload compression uses the V.44 lossless compression algorithm. … Stateful compression is able to take advantage of redundancy in all messages being sent instead of only redundancy within a message, thus providing significantly better compression ratios. Compression ratios of up to 12:1 are achieved." See http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 9. Defendants specifically intended and were aware that the normal and customary use of the Accused Instrumentality on compatible systems would infringe the '728 patent. Defendants performed the acts that constitute induced infringement, and would induce actual infringement, with the knowledge of the '728 patent and with the knowledge, or willful blindness to the probability, that the induced acts would constitute infringement. On information and belief, Defendants engaged in such inducement to promote the sales of the Accused Instrumentality, *e.g.,* through

Defendants' user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '728 patent. Accordingly, Defendants have induced since the filing of the original Complaint on February 14, 2017 and continue to induce end users of the accused products to use the accused products in their ordinary and customary way with compatible systems to make and/or use systems infringing the '728 patent, knowing that such use of the Accused Instrumentality with compatible systems will result in infringement of the '728 patent.

32. For similar reasons, Defendants also infringe the '728 patent by supplying or causing to be supplied in or from the United States all or a substantial portion of the components of the Accused Instrumentality, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the '728 patent if such combination occurred within the United States. For example, Defendants supply or cause to be supplied in or from the United States all or a substantial portion of the hardware (e.g., gateways and terminals) and software (e.g., operating software that performs data compression) components of the Accused Instrumentality in such a manner as to actively induce the combination of such components (e.g., by loading, or instructing users to load, the software on the hardware; by operating and managing, or instructing users to operate and manage, the network; by installing, registering, and activating, or instructing users to install, register, or activate, software of the Accused Instrumentality; or by enabling and configuring, or instructing users to enable and configure, the compression functionalities of the Accused Instrumentality) outside of the United States.

33. Defendants also indirectly infringe the '728 patent by manufacturing, using, selling, offering for sale, and/or importing the accused products, with knowledge that the accused products were and are especially manufactured and/or especially adapted for use in infringing the '728 patent and are not a staple article or commodity of commerce suitable for substantial non-infringing use. On information and belief, the Accused Instrumentality

is designed to function with compatible hardware to create systems for compressing data comprising; a processor; one or more content dependent data compression encoders; and a single data compression encoder; wherein the processor is configured: to analyze data within a data block to identify one or more parameters or attributes of the data wherein the analyzing of the data within the data block to identify the one or more parameters or attributes of the data excludes analyzing based solely on a descriptor that is indicative of the one or more parameters or attributes of the data within the data block; to perform content dependent data compression with the one or more content dependent data compression encoders if the one or more parameters or attributes of the data are identified; and to perform data compression with the single data compression encoder, if the one or more parameters or attributes of the data are not identified. Because the Accused Instrumentality is designed to operate as the claimed system for compressing input data, the Accused Instrumentality has no substantial non-infringing uses, and any other uses would be unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental. Defendants' manufacture, use, sale, offering for sale, and/or importation of the Accused Instrumentality constitutes contributory infringement of the '728 patent.

34. For similar reasons, Defendants also infringe the '728 patent by supplying or causing to be supplied in or from the United States components of the Accused Instrumentality that are especially made or especially adapted for use in the Accused Instrumentality, where such components are not staple articles or commodities of commerce suitable for substantial noninfringing use, and where such components are uncombined in whole or in part, knowing that such components are so made or adapted and intending that such components are combined outside of the United States in a manner that would infringe the '728 patent if such combination occurred within the United States. For example, Defendants supply or cause to be supplied in or from the United States hardware (e.g., gateways and terminals) and software (e.g., operating software that performs data compression) components of the Accused Instrumentality that are especially

made or especially adapted for use in the Accused Instrumentality, where such hardware and software components are not staple articles or commodities of commerce suitable for substantial noninfringing use, knowing that such components are so made or adapted and intending that such components are combined outside of the United States (as evidenced by Defendants' own actions or instructions to users in, e.g., loading the software on the hardware; operating and managing the network; installing, registering, and activating software of the Accused Instrumentality; and enabling and configuring the compression functionalities of the Accused Instrumentality).

35. The Accused Instrumentality is a system for compressing data, comprising a processor. For example, the Accused Instrumentality must contain a processor.

36. The Accused Instrumentality is a system for compressing data, comprising one or more content dependent data compression encoders. For example, the Accused Instrumentality recognizes packet header data and removes redundancies in such data, which is a content dependent data compression encoder. This results in transmitting fewer bits to represent a data set and decreased use of network bandwidth. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 9 ("A standard TCP/IP header is 40 bytes per packet, and most of that information is redundant for a given session. Header compression suppresses any redundant information, reducing the bandwidth required for the header. This compression capability requires that a large number of the fields either do not change or change only in expected ways. Inbound header compression compresses TCP/IP headers from 40 bytes to 10–12 bytes, reducing typical bandwidth usage by 15–-20%. The inbound compression algorithm is a Hughes-extended version of RFC 1144. Multiple types of IP headers can be compressed, including IP headers, UDP headers, TCP headers, RTP headers, and Hughes' PBP headers.").

37. The Accused Instrumentality comprises a single data compression encoder. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-

broadband-satellite-routers/download?locale=en at 9 ("PEP packet payload compression uses the V.44 lossless compression algorithm. V.44 is an ITU standardized compression technology based on a Hughes-patented compression algorithm.").

38. The Accused Instrumentality analyzes data within a data block to identify one or more parameters or attributes of the data, for example, whether any information in the header is redundant. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 9 ("A standard TCP/IP header is 40 bytes per packet, and most of that information is redundant for a given session. Header compression suppresses any redundant information, reducing the bandwidth required for the header. This compression capability requires that a large number of the fields either do not change or change only in expected ways. Inbound header compression compresses TCP/IP headers from 40 bytes to 10–12 bytes, reducing typical bandwidth usage by 15–-20%. The inbound compression algorithm is a Hughes-extended version of RFC 1144. Multiple types of IP headers can be compressed, including IP headers, UDP headers, TCP headers, RTP headers, and Hughes' PBP headers.").

39. The Accused Instrumentality performs content dependent data compression with the one or more content dependent data compression encoders if the one or more parameters or attributes of the data are identified, for example, whether any information in the header is redundant. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 9 ("A standard TCP/IP header is 40 bytes per packet, and most of that information is redundant for a given session. Header compression suppresses any redundant information, reducing the bandwidth required for the header. This compression capability requires that a large number of the fields either do not change or change only in expected ways. Inbound header compression compresses TCP/IP headers from 40 bytes to 10–12 bytes, reducing typical bandwidth usage by 15–-20%. The inbound compression algorithm is a Hughes-extended version of RFC 1144. Multiple types of IP headers can be compressed, including IP headers,

UDP headers, TCP headers, RTP headers, and Hughes' PBP headers.").

40. The Accused Instrumentality performs data compression with the single data compression encoder, if the one or more parameters or attributes of the data are not identified. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 9 ("PEP packet payload compression uses the V.44 lossless compression algorithm. V.44 is an ITU standardized compression technology based on a Hughes-patented compression algorithm.").

41. Defendants also infringe other claims of the '728 patent, directly and through inducing infringement, contributory infringement, or exportation infringement, for similar reasons as explained above with respect to Claim 1 of the '728 patent.

42. By making, using, offering for sale, selling and/or importing into the United States the Accused Instrumentality, or by supplying or causing to be supplied from the United States components of the Accused Instrumentality, and touting the benefits of using the Accused Instrumentality's compression features, Defendants have injured Realtime and are liable to Realtime for infringement of the '728 patent pursuant to 35 U.S.C. § 271.

43. As a result of Defendants' infringement of the '728 patent, Plaintiff Realtime is entitled to monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court.

## COUNT III

## INFRINGEMENT OF U.S. PATENT NO. 7,358,867

44. Plaintiff realleges and incorporates by reference paragraphs 1-43 above, as if fully set forth herein.

45. Plaintiff Realtime is the owner by assignment of United States Patent No. 7,358,867 entitled "Content independent data compression method and system." The '867 patent was duly and legally issued by the United States Patent and Trademark Office on

April 15, 2008. A true and correct copy of the '867 Patent is included as Exhibit C.

**Accused Instrumentality Including HN/HX Systems**

46. On information and belief, Defendants have offered for sale, sold and/or imported into the United States Hughes products that infringe the '867 patent, and continues to do so. By way of illustrative example, these infringing products include, without limitation, Defendants' products and services, such as HN/HX Systems, and all versions and variations thereof since the issuance of the '867 patent ("Accused Instrumentality").

47. On information and belief, Defendants have directly infringed and continue to infringe the '867 patent, for example, through their own use and testing of the accused products to practice compression methods claimed by the '867 patent, including a method comprising: receiving a plurality of data blocks; determining whether or not to compress each one of said plurality of data blocks with a particular one or more of several encoders; if said determination is to compress with said particular one or more of said several encoders for a particular one of said plurality of data blocks; compressing said particular one of said plurality of data blocks with said particular one or more of said several encoders to provide a compressed data block; providing a data compression type descriptor representative of said particular one or more of said several encoders; outputting said data compression type descriptor and said compressed data block; if said determination is to not compress said particular one of said plurality of data blocks; providing a null data compression type descriptor representative of said determination not to compress; and outputting said null data compression type descriptor and said particular one of said plurality of data blocks. On information and belief, Defendants use the Accused Instrumentality in its ordinary and customary fashion for their own internal non-testing business purposes, while testing the Accused Instrumentality, and while providing technical support and repair services for the Accused Instrumentality to Defendants' customers, and use of the Accused Instrumentality in its ordinary and customary fashion

results in infringement of the methods claimed by the '867 patent.

48. On information and belief, Defendants have had knowledge of the '867 patent since at least the filing of this Complaint or shortly thereafter, and on information and belief, Defendants knew of the '867 patent and knew of their infringement, including by way of this lawsuit.

49. Defendants' affirmative acts of making, using, selling, offering for sale, and/or importing the Accused Instrumentality have induced since the filing of the original Complaint on February 14, 2017 and continue to induce users of the Accused Instrumentality to use the Accused Instrumentality in its normal and customary way to infringe the '867 patent by practicing compression methods claimed by the '867 patent, including a method comprising: receiving a plurality of data blocks; determining whether or not to compress each one of said plurality of data blocks with a particular one or more of several encoders; if said determination is to compress with said particular one or more of said several encoders for a particular one of said plurality of data blocks; compressing said particular one of said plurality of data blocks with said particular one or more of said several encoders to provide a compressed data block; providing a data compression type descriptor representative of said particular one or more of said several encoders; outputting said data compression type descriptor and said compressed data block; if said determination is to not compress said particular one of said plurality of data blocks; providing a null data compression type descriptor representative of said determination not to compress; and outputting said null data compression type descriptor and said particular one of said plurality of data blocks. For example, Defendants explain to customers the benefits of using the Accused Instrumentality, "Hughes HN/HX Systems provide high-speed IP satellite connectivity between corporate headquarters and/or the Internet and multiple remote sites. HN/HX Systems include a variety of standard and specialized IP features designed to optimize space segment and minimize latencies for IP networking protocols and services. … PEP packet payload compression uses the V.44 lossless

compression algorithm. V.44 is an ITU standardized compression technology based on a Hughes-patented compression algorithm." See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 2, 9; https://tools.ietf.org/html/rfc3051 ("V.44 Packet Method is based upon the LZJH data compression algorithm. Throughout the remainder of this document the terms V.44 Packet Method and LZJH are synonymous. … **4.4 Minimum packet size threshold:** As stated in [RFC2393], small packets may not compress well. Informal tests using the LZJH algorithm on internet web pages and e-mail files show that the average payload size that typically produces expanded data is approximately 50 bytes. Thus, **implementations may prefer not to attempt to compress payloads of approximately 50 bytes or smaller. 4.5 Compressibility test:** The LZJH algorithm, as described in [V44], **is easily modified to incorporate an adaptive compressibility test**, as referenced in [RFC2393]. Annex B of [V44] specifies the mechanism for including such a test in LZJH."). Defendants specifically intended and were aware that the normal and customary use of the Accused Instrumentality would infringe the '867 patent. Defendants performed the acts that constitute induced infringement, and would induce actual infringement, with the knowledge of the '867 patent and with the knowledge, or willful blindness to the probability, that the induced acts would constitute infringement. On information and belief, Defendants engaged in such inducement to promote the sales of the Accused Instrumentality, *e.g.,* through Defendants' user manuals, product support, marketing materials, and training materials to actively induce the users of the Accused Instrumentality to infringe the '867 patent. Accordingly, Defendants have induced since the filing of the original Complaint on February 14, 2017 and continue to induce users of the Accused Instrumentality to use the Accused Instrumentality in its ordinary and customary way to infringe the '867 patent, knowing that such use constitutes infringement of the '867 patent.

50. The Accused Instrumentality practices a method comprising: receiving a

plurality of data blocks. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 2:

51. Upon information and belief, the Accused Instrumentality determines whether or not to compress each one of said plurality of data blocks with a particular one or more of several encoders. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 9 ("PEP packet payload compression uses the V.44 lossless compression algorithm. V.44 is an ITU standardized compression technology based on a Hughes-patented compression algorithm."); https://tools.ietf.org/html/rfc3051 ("V.44 Packet Method is based upon the LZJH data compression algorithm. Throughout the remainder of this document the terms V.44 Packet Method and LZJH are synonymous. … **4.4 Minimum packet size threshold:** As stated in [RFC2393], small packets may not compress well. Informal tests using the LZJH algorithm on internet web pages and e-mail files show that the average payload size that typically produces expanded data is approximately 50 bytes. Thus, **implementations may prefer not to attempt to compress payloads of approximately 50 bytes or smaller. 4.5 Compressibility test:** The LZJH algorithm, as described in [V44], **is easily modified to incorporate an adaptive compressibility test**, as referenced in [RFC2393]. Annex B of [V44] specifies the mechanism for including such a test in LZJH.").).

52. Upon information and belief, in the Accused Instrumentality, if said determination is to compress with said particular one or more of said several encoders for a particular one of said plurality of data blocks; compressing said particular one of said plurality of data blocks with said particular one or more of said several encoders to provide a compressed data block. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 9 ("PEP packet payload compression uses the V.44 lossless compression algorithm. V.44 is an ITU standardized compression technology based on a Hughes-patented compression

algorithm."); https://tools.ietf.org/html/rfc3051 ("V.44 Packet Method is based upon the LZJH data compression algorithm. Throughout the remainder of this document the terms V.44 Packet Method and LZJH are synonymous. … **4.4 Minimum packet size threshold:** As stated in [RFC2393], small packets may not compress well. Informal tests using the LZJH algorithm on internet web pages and e-mail files show that the average payload size that typically produces expanded data is approximately 50 bytes. Thus, **implementations may prefer not to attempt to compress payloads of approximately 50 bytes or smaller. 4.5 Compressibility test:** The LZJH algorithm, as described in [V44], **is easily modified to incorporate an adaptive compressibility test**, as referenced in [RFC2393]. Annex B of [V44] specifies the mechanism for including such a test in LZJH.").).

53. Upon information and belief, the Accused Instrumentality provides a data compression type descriptor representative of said particular one or more of said several encoders and outputs said data compression type descriptor and said compressed data block. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 9 ("PEP packet payload compression uses the V.44 lossless compression algorithm. V.44 is an ITU standardized compression technology based on a Hughes-patented compression algorithm."); https://tools.ietf.org/html/rfc3051 ("V.44 Packet Method is based upon the LZJH data compression algorithm. Throughout the remainder of this document the terms V.44 Packet Method and LZJH are synonymous. … **4.4 Minimum packet size threshold:** As stated in [RFC2393], small packets may not compress well. Informal tests using the LZJH algorithm on internet web pages and e-mail files show that the average payload size that typically produces expanded data is approximately 50 bytes. Thus, **implementations may prefer not to attempt to compress payloads of approximately 50 bytes or smaller. 4.5 Compressibility test:** The LZJH algorithm, as described in [V44], **is easily modified to incorporate an adaptive compressibility test**, as referenced in [RFC2393]. Annex B of [V44] specifies the mechanism for including such a test in LZJH.").).

54. Upon information and belief, if said determination is to not compress said particular one of said plurality of data blocks; the Accused Instrumentality provides a null data compression type descriptor representative of said determination not to compress; and outputting said null data compression type descriptor and said particular one of said plurality of data blocks. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 9 ("PEP packet payload compression uses the V.44 lossless compression algorithm. V.44 is an ITU standardized compression technology based on a Hughes-patented compression algorithm."); https://tools.ietf.org/html/rfc3051 ("V.44 Packet Method is based upon the LZJH data compression algorithm. Throughout the remainder of this document the terms V.44 Packet Method and LZJH are synonymous. … **4.4 Minimum packet size threshold:** As stated in [RFC2393], small packets may not compress well. Informal tests using the LZJH algorithm on internet web pages and e-mail files show that the average payload size that typically produces expanded data is approximately 50 bytes. Thus, **implementations may prefer not to attempt to compress payloads of approximately 50 bytes or smaller. 4.5 Compressibility test:** The LZJH algorithm, as described in [V44], **is easily modified to incorporate an adaptive compressibility test**, as referenced in [RFC2393]. Annex B of [V44] specifies the mechanism for including such a test in LZJH.").).

55. Defendants also infringe other claims of the '867 patent, directly and through inducing infringement, for similar reasons as explained above with respect to Claim 16 of the '867 patent.

56. By making, using, offering for sale, selling and/or importing into the United States the Accused Instrumentality, and touting the benefits of using the Accused Instrumentality's compression features, Defendants have injured Realtime and are liable to Realtime for infringement of the '867 patent pursuant to 35 U.S.C. § 271.

57. As a result of Defendants' infringement of the '867 patent, Plaintiff Realtime is entitled to monetary damages in an amount adequate to compensate for

Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court.

**Accused Instrumentality Including Hughes Web Optimizer**

58. On information and belief, Defendants have offered for sale, sold and/or imported into the United States Hughes products that infringe the '867 patent, and continues to do so. By way of illustrative example, these infringing products include, without limitation, Defendants' products and services, such as Hughes Web Optimizer, and all versions and variations thereof since the issuance of the '867 patent ("Accused Instrumentality").

59. On information and belief, Defendants have directly infringed and continue to infringe the '867 patent, for example, through their own use and testing of the accused products to practice compression methods claimed by the '867 patent, including a method comprising: receiving a plurality of data blocks; determining whether or not to compress each one of said plurality of data blocks with a particular one or more of several encoders; if said determination is to compress with said particular one or more of said several encoders for a particular one of said plurality of data blocks; compressing said particular one of said plurality of data blocks with said particular one or more of said several encoders to provide a compressed data block; providing a data compression type descriptor representative of said particular one or more of said several encoders; outputting said data compression type descriptor and said compressed data block; if said determination is to not compress said particular one of said plurality of data blocks; providing a null data compression type descriptor representative of said determination not to compress; and outputting said null data compression type descriptor and said particular one of said plurality of data blocks. On information and belief, Defendants use the Accused Instrumentality in its ordinary and customary fashion for their own internal non-testing business purposes, while testing the Accused Instrumentality, and while providing technical support and repair services for the Accused Instrumentality to Defendants'

customers, and use of the Accused Instrumentality in its ordinary and customary fashion results in infringement of the methods claimed by the '867 patent.

60. On information and belief, Defendants have had knowledge of the '867 patent since at least the filing of this Complaint or shortly thereafter, and on information and belief, Defendants knew of the '867 patent and knew of their infringement, including by way of this lawsuit.

61. Defendants' affirmative acts of making, using, selling, offering for sale, and/or importing the Accused Instrumentality have induced since the filing of the original Complaint on February 14, 2017 and continue to induce users of the Accused Instrumentality to use the Accused Instrumentality in its normal and customary way to infringe the '867 patent by practicing compression methods claimed by the '867 patent, including a method comprising: receiving a plurality of data blocks; determining whether or not to compress each one of said plurality of data blocks with a particular one or more of several encoders; if said determination is to compress with said particular one or more of said several encoders for a particular one of said plurality of data blocks; compressing said particular one of said plurality of data blocks with said particular one or more of said several encoders to provide a compressed data block; providing a data compression type descriptor representative of said particular one or more of said several encoders; outputting said data compression type descriptor and said compressed data block; if said determination is to not compress said particular one of said plurality of data blocks; providing a null data compression type descriptor representative of said determination not to compress; and outputting said null data compression type descriptor and said particular one of said plurality of data blocks. For example, Defendants explain to customers the benefits of using the Accused Instrumentality, "In addition to the payload optimization techniques already mentioned, Defendants have also implemented "Web Optimizers," which work at the HTTP layer and are able to compress HTTP content. A Web Optimizer is typically implemented as a server at the HN or HX hub station and applies a number of

data-specific compression techniques including image compression for JPG and GIF images. Through the application of the Web Optimizer, Hughes can reduce HTTP traffic volume by up to 30 percent. It should be noted that the application of compression on images results in loss of image quality. The higher the compression savings the greater the impact to image quality." *See, e.g.*, http://www.hughes.com/resources/hn-slash-hx-bandwidth-efficiency/download?locale=en at 6. Defendants specifically intended and were aware that the normal and customary use of the Accused Instrumentality would infringe the '867 patent. Defendants performed the acts that constitute induced infringement, and would induce actual infringement, with the knowledge of the '867 patent and with the knowledge, or willful blindness to the probability, that the induced acts would constitute infringement. On information and belief, Defendants engaged in such inducement to promote the sales of the Accused Instrumentality, *e.g.,* through Defendants' user manuals, product support, marketing materials, and training materials to actively induce the users of the Accused Instrumentality to infringe the '867 patent. Accordingly, Defendants have induced since the filing of the original Complaint on February 14, 2017 and continue to induce users of the Accused Instrumentality to use the Accused Instrumentality in its ordinary and customary way to infringe the '867 patent, knowing that such use constitutes infringement of the '867 patent.

62. The Accused Instrumentality practices a method comprising: receiving a plurality of data blocks, *e.g.*, from the Internet. *See, e.g.*, http://www.hughes.com/resources/hn-slash-hx-bandwidth-efficiency/download?locale=en at 6 ("In addition to the payload optimization techniques already mentioned, Defendants have also implemented "Web Optimizers," which work at the HTTP layer and are able to compress HTTP content. A Web Optimizer is typically implemented as a server at the HN or HX hub station … Figure 8 illustrates that the Web Optimizer is placed between the Internet and the satellite network hub.")

63. Upon information and belief, the Accused Instrumentality determines whether or not to compress each one of said plurality of data blocks with a particular one or more of several encoders. For example, as the Accused Instrumentality "applies a number of data-specific compression techniques including image compression for JPG and GIF images", there may be certain data types that are not compressed. *See, e.g.*, http://www.hughes.com/resources/hn-slash-hx-bandwidth-efficiency/download?locale=en at 6.

64. Upon information and belief, in the Accused Instrumentality, if said determination is to compress with said particular one or more of said several encoders for a particular one of said plurality of data blocks; compressing said particular one of said plurality of data blocks with said particular one or more of said several encoders to provide a compressed data block. For example, the Accused Instrumentality compresses JPG images with one technique and GIF images with another technique. *See, e.g.*, http://www.hughes.com/resources/hn-slash-hx-bandwidth-efficiency/download?locale=en at 6 ("Web Optimizer … applies a number of data-specific compression techniques including image compression for JPG and GIF images").

65. Upon information and belief, the Accused Instrumentality provides a data compression type descriptor representative of said particular one or more of said several encoders and outputs said data compression type descriptor and said compressed data block. *See, e.g.*, http://www.hughes.com/resources/hn-slash-hx-bandwidth-efficiency/download?locale=en at 6 ("Web Optimizer … applies a number of data-specific compression techniques including image compression for JPG and GIF images").

66. Upon information and belief, if said determination is to not compress said particular one of said plurality of data blocks (for example, if the data is not a type for which a data-specific compression technique has been assigned); the Accused Instrumentality provides a null data compression type descriptor representative of said determination not to compress; and outputting said null data compression type descriptor

and said particular one of said plurality of data blocks. *See, e.g.*, http://www.hughes.com/resources/hn-slash-hx-bandwidth-efficiency/download?locale=en at 6 ("Web Optimizer … applies a number of data-specific compression techniques including image compression for JPG and GIF images").

67. Defendants also infringe other claims of the '867 patent, directly and through inducing infringement, for similar reasons as explained above with respect to Claim 16 of the '867 patent.

68. By making, using, offering for sale, selling and/or importing into the United States the Accused Instrumentality, and touting the benefits of using the Accused Instrumentality's compression features, Defendants have injured Realtime and are liable to Realtime for infringement of the '867 patent pursuant to 35 U.S.C. § 271.

69. As a result of Defendants' infringement of the '867 patent, Plaintiff Realtime is entitled to monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court.

## COUNT IV

## INFRINGEMENT OF U.S. PATENT NO. 8,502,707

70. Plaintiff realleges and incorporates by reference paragraphs 1-69 above, as if fully set forth herein.

71. Plaintiff Realtime is the owner by assignment of United States Patent No. 8,502,707 entitled "Data compression systems and methods." The '707 patent was duly and legally issued by the United States Patent and Trademark Office on August 6, 2013. A true and correct copy of the '707 Patent is included as Exhibit D.

### Accused Instrumentality Including HN/HX Systems

72. On information and belief, Defendants have offered for sale, sold and/or imported into the United States Hughes products that infringe the '707 patent, and continues to do so. By way of illustrative example, these infringing products include,

without limitation, Defendants' products and services, such as HN/HX Systems, and all versions and variations thereof since the issuance of the '707 patent ("Accused Instrumentality").

73. On information and belief, Defendants have directly infringed and continue to infringe the '707 patent, for example, through their own use and testing of the accused products to practice compression methods claimed by the '707 patent, including a method comprising: receiving a data block; outputting data, wherein said outputted data is determined to be: said data block in received form, or a compressed data block wherein said compressed data block is provided by one of a plurality of compression techniques based on a determination between said plurality of compression techniques, and a determination is made whether data expansion occurred with respect to said compressed data block; and outputting a descriptor with said outputted data indicative of no compression or the one of said plurality of compression techniques utilized to provide said compressed data block. On information and belief, Defendants use the Accused Instrumentality in its ordinary and customary fashion for their own internal non-testing business purposes, while testing the Accused Instrumentality, and while providing technical support and repair services for the Accused Instrumentality to Defendants' customers, and use of the Accused Instrumentality in its ordinary and customary fashion results in infringement of the methods claimed by the '707 patent.

74. On information and belief, Defendants have had knowledge of the '707 patent since at least the filing of this Complaint or shortly thereafter, and on information and belief, Defendants knew of the '707 patent and knew of their infringement, including by way of this lawsuit.

75. Defendants' affirmative acts of making, using, selling, offering for sale, and/or importing the Accused Instrumentality have induced since the filing of the original Complaint on February 14, 2017 and continue to induce users of the Accused Instrumentality to use the Accused Instrumentality in its normal and customary way to

infringe the '707 patent by practicing compression methods claimed by the '707 patent, including a method comprising: receiving a data block; outputting data, wherein said outputted data is determined to be: said data block in received form, or a compressed data block wherein said compressed data block is provided by one of a plurality of compression techniques based on a determination between said plurality of compression techniques, and a determination is made whether data expansion occurred with respect to said compressed data block; and outputting a descriptor with said outputted data indicative of no compression or the one of said plurality of compression techniques utilized to provide said compressed data block. For example, Defendants explain to customers the benefits of using the Accused Instrumentality, "Hughes HN/HX Systems provide high-speed IP satellite connectivity between corporate headquarters and/or the Internet and multiple remote sites. HN/HX Systems include a variety of standard and specialized IP features designed to optimize space segment and minimize latencies for IP networking protocols and services. … PEP packet payload compression uses the V.44 lossless compression algorithm. V.44 is an ITU standardized compression technology based on a Hughes-patented compression algorithm." See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 2, 9; https://tools.ietf.org/html/rfc3051 ("V.44 Packet Method is based upon the LZJH data compression algorithm. Throughout the remainder of this document the terms V.44 Packet Method and LZJH are synonymous. … **4.4 Minimum packet size threshold:** As stated in [RFC2393], small packets may not compress well. Informal tests using the LZJH algorithm on internet web pages and e-mail files show that the average payload size that typically produces expanded data is approximately 50 bytes. Thus, **implementations may prefer not to attempt to compress payloads of approximately 50 bytes or smaller. 4.5 Compressibility test:** The LZJH algorithm, as described in [V44], **is easily modified to incorporate an adaptive compressibility test**, as referenced in [RFC2393]. Annex B of [V44] specifies the mechanism for including such a test in LZJH."). Defendants

specifically intended and were aware that the normal and customary use of the Accused Instrumentality would infringe the '707 patent. Defendants performed the acts that constitute induced infringement, and would induce actual infringement, with the knowledge of the '707 patent and with the knowledge, or willful blindness to the probability, that the induced acts would constitute infringement. On information and belief, Defendants engaged in such inducement to promote the sales of the Accused Instrumentality, *e.g.,* through Defendants' user manuals, product support, marketing materials, and training materials to actively induce the users of the Accused Instrumentality to infringe the '707 patent. Accordingly, Defendants have induced since the filing of the original Complaint on February 14, 2017 and continue to induce users of the Accused Instrumentality to use the Accused Instrumentality in its ordinary and customary way to infringe the '707 patent, knowing that such use constitutes infringement of the '707 patent.

76. The Accused Instrumentality practices a method comprising: receiving a data block. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 2:

77. On information and belief, the Accused Instrumentality outputs data, wherein said outputted data is determined to be: said data block in received form, or a compressed data block. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 2:

http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 9 ("PEP packet payload compression uses the V.44 lossless compression algorithm. V.44 is an ITU standardized compression technology based on a Hughes-patented compression algorithm."); https://tools.ietf.org/html/rfc3051 ("V.44 Packet Method is based upon the LZJH data compression algorithm. Throughout the remainder of this document the terms V.44 Packet Method and LZJH are synonymous.

… **4.4 Minimum packet size threshold:** As stated in [RFC2393], small packets may not compress well. Informal tests using the LZJH algorithm on internet web pages and e-mail files show that the average payload size that typically produces expanded data is approximately 50 bytes. Thus, **implementations may prefer not to attempt to compress payloads of approximately 50 bytes or smaller. 4.5 Compressibility test:** The LZJH algorithm, as described in [V44], **is easily modified to incorporate an adaptive compressibility test**, as referenced in [RFC2393]. Annex B of [V44] specifies the mechanism for including such a test in LZJH.").).

78. In the Accused Instrumentality, the compressed data block is provided by one of a plurality of compression techniques based on a determination between said plurality of compression techniques. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 8-9 ("HN/HX Systems provide IP/TCP/UDP/RTP header compression and payload compression in both inbound and outbound directions. A standard TCP/IP header is 40 bytes per packet, and most of that information is redundant for a given session. Header compression suppresses any redundant information, reducing the bandwidth required for the header. This compression capability requires that a large number of the fields either do not change or change only in expected ways. Inbound header compression compresses TCP/IP headers from 40 bytes to 10–12 bytes, reducing typical bandwidth usage by 15–-20%. The inbound compression algorithm is a Hughes-extended version of RFC 1144. Multiple types of IP headers can be compressed, including IP headers, UDP headers, TCP headers, RTP headers, and Hughes' PBP headers. Outbound header compression compresses IP, UDP, and RTP headers using the header fields that do not change or change in predictable ways. The outbound compression algorithm is based on RFC 3095, Robust Header Compression, and the Hughes inbound header compression algorithm. IP/UDP/RTP headers for RTP packets (types G.729 and G.723.1) are compressed. With outbound header compression, the size of the IP/UDP/RTP headers becomes 5 bytes from

40 bytes. With an average RTP payload size of 20 bytes, the expected compression ratio for IP/UDP/RTP packets is 35/(40+20) = 58.3 %. PEP packet payload compression uses the V.44 lossless compression algorithm. V.44 is an ITU standardized compression technology based on a Hughes-patented compression algorithm. The PEP stateful compression implementation takes advantage of the guaranteed, in-order delivery service provided by the PEP backbone protocol. Stateful compression is able to take advantage of redundancy in all messages being sent instead of only redundancy within a message, thus providing significantly better compression ratios. Compression ratios of up to 12:1 are achieved. HN/HX Systems feature IP Payload Compression for UDP Packets utilizing the IP Payload Compression Protocol (IPComp) per RFC 3173 to compress UDP traffic (for example, DNS, BRP, SNMP, Multicast traffic) using a lossless, stateless compression algorithm. The bandwidth savings is a function of traffic type. Bandwidth usage for typical DNS request traffic will be reduced by 10%, DNS responses by 30%, and SNMP traffic by 50%.").

79. On information and belief, in the Accused Instrumentality, a determination is made whether data expansion occurred with respect to said compressed data block. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 9 ("PEP packet payload compression uses the V.44 lossless compression algorithm. V.44 is an ITU standardized compression technology based on a Hughes-patented compression algorithm."); https://tools.ietf.org/html/rfc3051 ("V.44 Packet Method is based upon the LZJH data compression algorithm. Throughout the remainder of this document the terms V.44 Packet Method and LZJH are synonymous. … **4.4 Minimum packet size threshold:** As stated in [RFC2393], small packets may not compress well. Informal tests using the LZJH algorithm on internet web pages and e-mail files show that the average payload size that typically produces **expanded data** is approximately 50 bytes. Thus, **implementations may prefer not to attempt to compress payloads of approximately 50 bytes or smaller. 4.5 Compressibility test:** The LZJH

algorithm, as described in [V44], **is easily modified to incorporate an adaptive compressibility test**, as referenced in [RFC2393]. Annex B of [V44] specifies the mechanism for including such a test in LZJH.").).

80. On information and belief, the Accused Instrumentality outputs a descriptor with said outputted data indicative of no compression or the one of said plurality of compression techniques utilized to provide said compressed data block. See, e.g., http://www.hughes.com/resources/key-features-of-hughes-hn-slash-hx-broadband-satellite-routers/download?locale=en at 9 ("HN/HX Systems provide IP/TCP/UDP/RTP header compression and payload compression in both inbound and outbound directions. A standard TCP/IP header is 40 bytes per packet, and most of that information is redundant for a given session. Header compression suppresses any redundant information, reducing the bandwidth required for the header. This compression capability requires that a large number of the fields either do not change or change only in expected ways. Inbound header compression compresses TCP/IP headers from 40 bytes to 10–12 bytes, reducing typical bandwidth usage by 15–-20%. The inbound compression algorithm is a Hughes-extended version of RFC 1144. Multiple types of IP headers can be compressed, including IP headers, UDP headers, TCP headers, RTP headers, and Hughes' PBP headers. Outbound header compression compresses IP, UDP, and RTP headers using the header fields that do not change or change in predictable ways. The outbound compression algorithm is based on RFC 3095, Robust Header Compression, and the Hughes inbound header compression algorithm. IP/UDP/RTP headers for RTP packets (types G.729 and G.723.1) are compressed. With outbound header compression, the size of the IP/UDP/RTP headers becomes 5 bytes from 40 bytes. With an average RTP payload size of 20 bytes, the expected compression ratio for IP/UDP/RTP packets is 35/(40+20) = 58.3 %. PEP packet payload compression uses the V.44 lossless compression algorithm. V.44 is an ITU standardized compression technology based on a Hughes-patented compression algorithm. The PEP stateful compression implementation takes advantage of the guaranteed, in-order delivery

service provided by the PEP backbone protocol. Stateful compression is able to take advantage of redundancy in all messages being sent instead of only redundancy within a message, thus providing significantly better compression ratios. Compression ratios of up to 12:1 are achieved. HN/HX Systems feature IP Payload Compression for UDP Packets utilizing the IP Payload Compression Protocol (IPComp) per RFC 3173 to compress UDP traffic (for example, DNS, BRP, SNMP, Multicast traffic) using a lossless, stateless compression algorithm. The bandwidth savings is a function of traffic type. Bandwidth usage for typical DNS request traffic will be reduced by 10%, DNS responses by 30%, and SNMP traffic by 50%."); https://tools.ietf.org/html/rfc3051 ("V.44 Packet Method is based upon the LZJH data compression algorithm. Throughout the remainder of this document the terms V.44 Packet Method and LZJH are synonymous. … **4.4 Minimum packet size threshold:** As stated in [RFC2393], small packets may not compress well. Informal tests using the LZJH algorithm on internet web pages and e-mail files show that the average payload size that typically produces **expanded data** is approximately 50 bytes. Thus, **implementations may prefer not to attempt to compress payloads of approximately 50 bytes or smaller. 4.5 Compressibility test:** The LZJH algorithm, as described in [V44], **is easily modified to incorporate an adaptive compressibility test**, as referenced in [RFC2393]. Annex B of [V44] specifies the mechanism for including such a test in LZJH.").).

81. Defendants also infringe other claims of the '707 patent, directly and through inducing infringement and contributory infringement, for similar reasons as explained above with respect to Claim 16 of the '707 patent.

82. By making, using, offering for sale, selling and/or importing into the United States the Accused Instrumentality, and touting the benefits of using the Accused Instrumentality's compression features, Defendants have injured Realtime and are liable to Realtime for infringement of the '707 patent pursuant to 35 U.S.C. § 271.

83. As a result of Defendants' infringement of the '707 patent, Plaintiff

Realtime is entitled to monetary damages in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants, together with interest and costs as fixed by the Court.'

**PRAYER FOR RELIEF**

WHEREFORE, Plaintiff Realtime respectfully requests that this Court enter:

a. A judgment in favor of Plaintiff that Defendants have infringed, either literally and/or under the doctrine of equivalents, the '204 patent, the '728 patent, the '867 patent, and the '707 patent;

b. A permanent injunction prohibiting Defendants from further acts of infringement of the '204 patent, the '728 patent, the '867 patent, and the '707 patent;

c. A judgment and order requiring Defendants to pay Plaintiff its damages, costs, expenses, and prejudgment and post-judgment interest for Defendants' infringement of the '204 patent, the '728 patent, the '867 patent, and the '707 patent, as provided under 35 U.S.C. § 284; and

d. A judgment and order requiring Defendants to provide an accounting and to pay supplemental damages to Realtime, including without limitation, prejudgment and post-judgment interest;

e. That the damages for Defendants' infringement be increased under 35 U.S.C. § 284 to three times the amount found or assessed;

f. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to Plaintiff its reasonable attorneys' fees against Defendants; and

g. Any and all other relief as the Court may deem appropriate and just under the circumstances.

**DEMAND FOR JURY TRIAL**

Plaintiff, under Rule 38 of the Federal Rules of Civil Procedure, requests a trial by jury of any issues so triable by right.

Dated: July 17, 2018

Respectfully submitted,

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